

Dr. Sheetal Naresh Ghorpade

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Educational Qualification

- **Ph. D. (Mathematics)** from Gyan Vihar University, Jaipur, India (2015)
Research Area: Graph Theory and Image Processing
- **M. Sc. (Mathematics)** from University of Pune, India (1999), 64.4% (First Class)
Area of Specialization: Applied Mathematics
- **B. Sc. (Mathematics)** from North Maharashtra University, Jalgaon, India (1997), 77.7% (Distinction)

Academic and Professional Experience

- **21 Years of teaching experience in Engineering Institutes.**

Major Achievements

- Selected as Simons Visitor to undertake research visit at **Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy**, June 8 – July 25, 2019.
- Selected as an author to develop **Research Based Pedagogical Tools at IISER – Pune by Sheffield University, UK and MHRD India**, 2019.
- Selected as Simons Visitor to undertake research visit at **Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy**, May 20 – June 15, 2018.
- Certified as a trainer for conducting **STEM Teacher Training Workshops on Research Based Pedagogical Tools in India by Sheffield University, UK and MHRD India**, 2017.

- Awarded **International Travel Support (Young Scientist) by Department of Science and Technology (DST), Government of India** for presenting research paper in the 29th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE2016) at Vancouver, Canada, 2016.
- Awarded **ITS by Council for International Cooperation in Science (CICS/INSA DAE)** for presenting research paper in the 29th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE2016) at Vancouver, Canada, 2016.
- Demonstrated consistent **Best Performance in Teaching Applied Mathematics** and allied courses at Undergraduate as well as Postgraduate level and received Appreciations time to time.
- Awarded **National Level Scholarship for Graduation** by National Board of Higher Mathematics, Department of Atomic Energy (DAE), Govt. of India.
- Received Training under **Mathematical Talent Search Programmes** by National Board of Higher Mathematics, Department of Atomic Energy (DAE), Govt. of India

Research Activities

Area of Expertise

- **Graph Theory and Image Processing:**
Graph Labeling, Graph Partitioning, Scheduling and Sorting, Image Segmentation
- **Wireless Networks and Telecom Technologies:**
Wireless Sensor Networks, Internet of Things (IoT), Low Power Wide Area Networks (LPWANs)
- **Optimization Techniques:**
Evolutionary Algorithms, Swarm Intelligence, Hybrid meta-heuristic

Research Projects

Title of the Project/Research Activity	Funded by	Duration
Artificial Intelligence of Things	Abdus Salem International Centre for Theoretical Physics (ICTP), Trieste, Italy	2020 - 2023
Managing Visitors to Science Express for Smart India Hackathon	MHRD, Govt. of India	2017

Experience in Writing Research Proposals to seek the Funding

- **Title of Project:** Quantum Inspired Neural Network based Reinforcement Learning for Combinatorial Optimization
Scheme: MATRICS: Science and Engineering Research Board, Govt. of India, R&D projects Call 2020 (In Evaluation Process).
- **Title of Project:** Development of Graph Theory and Intelligent Agent Approach based Model for Monitoring and Assistance of Elderly People in Smart Cities
Partners: Dr. Sheetal Ghorpade, RMDSSOE, Pune; Dr. Wah June Leong, University of Putra Malaysia, Malaysia; and Dr. Marrick Cadusale Neri, University of the Philippines, Diliman, Quezon City
Scheme: ASEAN-India Collaborative R&D projects Call 2019 (In Evaluation Process).

Research Paper Published:

(Note: First author, S. D. Kapade in the below list is the maiden name of candidate, Sheetal Naresh Ghorpade)

- 1) S. N. Ghorpade, Marco Zennaro, B. S. Chaudhari, "GWO based Model for Optimal Localization of Sensor Nodes in Smart Parking Systems," **IEEE Transaction on Intelligent Transport Systems**, Print ISSN: 1524-9050, Online ISSN: 1558-0016, DOI: 10.1109/TITS.2020.2964604 January, 2020.
- 2) S. N. Ghorpade, Marco Zennaro, B. S. Chaudhari, "Binary Grey Wolf Optimization based Topology Control for Wireless Sensor networks," **IET Journal of Wireless Sensor Systems**, vol.9, no. 6, pp. 333 – 339, November 2019. <https://ieeexplore.ieee.org/document/8916798>
- 3) S. N. Ghorpade, S. M. Khairnar, B. S. Chaudhari, "A New Particle Swarm Intelligence based Graph Partitioning for Image Segmentation," Springer **Journal of Electrical Systems and Inf Technol** 7, No. 4. <https://doi.org/10.1186/s43067-020-00012-9>, 2020.
- 4) S. N. Ghorpade, Marco Zennaro, B. S. Chaudhari, "Towards Green Computing: Intelligent Bio-Inspired Agent for IoT-enabled Wireless Sensor Networks," **Inderscience, International Journal of Sensor Networks**, <https://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijsnet>, May 2020.
- 5) S. N. Ghorpade, Marco Zennaro, B. S. Chaudhari, "IoT based Hybrid Optimized Fuzzy Threshold ELM Model for Localization of Elderly Persons," **accepted for publication in Sensors (MDPI)**, July 2020.

- 6) S. N. Ghorpade, "Metaheuristics for Graph Partitioning," International Journal of Computer Sciences and Engineering, vol.6, no. I, pp. 105 – 112, November 2018.
- 7) S. N. Ghorpade, "Dynamic Airspace Configuration Model using Swarm Intelligence based Graph Partitioning," Presented and Published in the 29th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE2016), Vancouver, Canada, pp. 1 -5, [DOI: 10.1109/CCECE.2016.7726631](https://doi.org/10.1109/CCECE.2016.7726631), May, 2016.
- 8) S. D. Kapade, S. M. Khairnar, B. S. Chaudhari, "Hybrid Optimization Technique for k-Partitioning of Graphs," Presented and Published in National Conference on Multidisciplinary Research in Science and Engineering, pp. 321 - 329, June 2015.
- 9) S. D. Kapade, S. M. Khairnar, B. S. Chaudhari, "Image Segmentation using min- cut and swarm intelligence," International Journal of mathematical Sciences and Engineering Applications, vol. 9, no. I, pp. 165 - 177, March 2015.
- 10) S. D. Kapade, S. M. Khairnar, B. S. Chaudhari, "Recent Trends in Metaheuristic Graph Partitioning Techniques," International Journal of Interdisciplinary Research and Advances in Engineering, vol. 7, no. 1, pp. 71 – 90, January 2015.
- 11) S. D. Kapade, S. M. Khairnar, B. S. Chaudhari, "Evaluation and Performance Analysis of Graph Theoretical Methods for Image Segmentation," Presented and Published in IEEE International Conference on Information Communication and Embedded Systems, Chennai, India, pp. 1 - 7, Feb 27 – 28, 2014.
- 12) S. D. Kapade, S. M. Khairnar, B. S. Chaudhari, "Graph Partitioning based Normalized Cut Methods," British Journal of Mathematics and Computer Science, vol. 5, no. 3, pp. 333- 340, October 2014.
- 13) S. D. Kapade, S. M. Khairnar, B. S. Chaudhari, "Enhanced Graph based Normalized cut Methods for Image Segmentation," ICTACT Journal on Image and Video Processing, vol. 5, no. 2, pp. 907 - 911, November 2014.
- 14) S. D. Kapade and S. M. Khairnar, "Vedic Mathematics the Cosmic Software for Fast Algorithm," International Journal of Computer Science and Applications, vol. 3, no. 1, pp. 305 - 311, March 2011.

Book Chapters Written:

- 1) **Image Segmentation Using N - Cut Based Graph Partitioning**, chapter for inclusion in the book **Advances in Mathematics and Computer Science Published by Science Domain International - UK**, ISBN: 978-81-934224-1-0, October 2019
- 2) **Energy optimization in low-power wide area networks by using heuristic techniques** in the book titled LPWAN Technologies for IoT and M2M Applications' to be published by Elsevier, 10.1016/B978-0-12-818880-4.00011-9, 2020.

Reviewer /Editor

Reviewer/ Editor for:

- IEEE Access The Multidisciplinary Journal
- British Journal of Mathematics and Computer Applications
- Journal of Advances in Mathematics and Computer Science
- Asian Journal of Physical and Chemical Sciences
- American Journal of Applied Sciences and Technology
- Advances in Science, Technology and Engineering Systems Journal
- International Journal of Research in Engineering and Technology

Professional Membership

- Life Member, **People Council of Education**, Tata Institute of Fundamental Research (TIFR), Mumbai, India.
- Life Member, **Organization for Women in Science for the Developing World (OWSD)**, ICTP Campus: Trieste, Italy.
- Member, **Institute of Electrical and Electronics Engineers (IEEE)**.
- Life Member ISTE

Contributed Values

- **Developed and Implemented Unit Based RBPTs** that are centered on real world situations to build the confidence among students about importance of solid education and correlation of mathematics in real life.
- **Introduced Mathematics Enrichment Program** for the students who were not ready to the advanced level.
- **Created and Administered** weekly quizzes and monthly tests to track student progress.

Invited Talks Delivered

- Conducted Training of Faculty on, **Project Based Learning** at Engineering Institutes of Sinhgad Technical education Society, January, 2020.
- Conducted Training of Faculty on, **Multiple Integrals and Its Applications** at Engineering Institutes of Sinhgad Technical education Society, January, 2020.

- Conducted Training of Faculty on, **Design and Implementation of Research Based Pedagogies for Engineering Mathematics** at Engineering Institutes of Sinhgad Technical education Society, September, 2020.
- Delivered invited talk on, **The Surprising Beauty of Mathematics** at Aksharnandan School, Pune, September, 2017.
- Delivered invited talk on **Graph Theory for the Social Cause**, during Faculty Development Program organized by Sinhgad Institute of Business Administration and Research, Pune, December 22, 2015.
- Conducted Training for Faculty of International Institute of Information Technology at Pune on **Innovative Teaching Methodologies**, August 2012.

Important Conferences/Workshops/Seminar Organized/Attended

- Organized National Level Online Faculty Development Workshop on **Writing and Publishing Quality Research Papers in Scholarly Top Tier Journals**, July 2020.
- Participated in Writers Workshop on **Research Based Pedagogical Tools (Level – 3)**, organized by Sheffield University UK at INSA, Delhi, December 2017.
- Participated in Workshop on **Research Based Pedagogical Tools (Level – 2)**, organized by Sheffield University UK at INSA, Delhi, December 2017.
- Participated in Workshop on **Research Based Pedagogical Tools (Level – 1)**, organized by Sheffield University UK at IISER, Pune, March 2017.
- Presented Paper in **29th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE2016) at Vancouver, Canada**, May 2016.
- Participated in the Workshop on **Internet of Thing Applications**, organized by Maharashtra Institute of Technology, Pune, January, 2016.
- Participated in the Workshop on **Sensitization and Technological Empowerment of Women Teachers/Researchers/Scientists for their Science and Technology Endeavors**, organized by Dept. of Science and Technology, Govt. of India, National Academy of Sciences and Savitribai Phule Pune University, India, September 2015.
- Presented Paper in **IEEE International Conference on Information Communication and Embedded Systems**, Chennai, India, February 2014.
- Convener of **National Level IEEE Student Awareness Contest** organized by IEEE Pune Section at International Institute of Technology, Pune, September 2013.
- Participated in Workshop on Revised Engineering Mathematics and Exam Reforms at Pune Institute of Computer and Technology, Pune, July 2012.
- Organized **Two days Workshop on Teaching Strategies in Applied Mathematics** at Sinhgad Academy of Engineering, Pune, December 2009.

- Attended Short Term Training Program on **Role of Mathematics in Computer Engineering** at Sinhgad College of Engineering, Pune, April 2009.
- Participated in ISTE Short Term Course on **Proactive Approach towards Quality in Engineering Education** at SKN College of Engineering, Pune, April 2004.
- Participated in State Level Workshop on **Quality Assurance and Accreditation of Technical Institutes**, Pune, June 2004.
- Organized University of Pune **Refresher Course on Applied Sciences** at SKN College of Engineering, Pune, June 2005.